



Attorney Docket No. 24500

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

NAKAJIMA, et al.

Confirmation No. 7547

Appl. No. 09/764,392

Art Unit: 2623

Filed: January 19, 2001

Examiner: M. DASTOURI

For: **DOCUMENT MODIFICATION APPARATUS AND IMAGE PROCESSING APPARATUS**

TRANSMITTAL LETTER

Mail Stop Appeal Brief
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313

Sir:

Submitted herewith for filing in the U.S. Patent and Trademark Office is the following:

- (1) Transmittal Letter;
- (2) Brief on Appeal under 37 C.F.R. § 1.192 (in triplicate).

If an Extension of Time under 37 CFR §1.136 is required and has not been separately petitioned, please consider this Transmittal Letter as including a petition for such Extension of Time and as a further authorization to charge any fee for such Extension of Time, as may be required by 37 CFR §1.17, to Deposit Account No. 14-0112. Also, please charge any fee deficiency, or credit any overpayment, in connection with this matter to Deposit Account No. 14-0112.

Respectfully submitted,
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December 27, 2005

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For: **DOCUMENT MODIFICATION APPARATUS AND IMAGE PROCESSING APPARATUS**

BRIEF ON APPEAL UNDER 37 C.F.R. § 1.192

Mail Stop Appeal

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Sir:

Appellants hereby submit their Brief on Appeal in triplicate under 37 C.F.R. § 1.192.

1. REAL PARTY IN INTEREST

The real party in interest is Riso Kagaku Corporation, the assignee by virtue of an assignment recorded January 19, 2001 at Reel/Frame 011483/0834.

2. RELATED APPEALS AND INTERFERENCES

There is no known related appeal or interference that will directly affect, that will be directly affected by, or that will have a bearing on the Board's decision on this appeal.

3. STATUS OF CLAIMS

Claims 1, 4 - 10, and 12 - 15 are pending in the present application and are included in the attached Appendix. Claims 1, 4 - 10, and 12 - 15 have been rejected. Claims 2, 3, and 11 were canceled in the amendment filed on February 6, 2004.

4. STATUS OF AMENDMENTS

All amendments submitted by Appellants have been entered.

5. SUMMARY OF THE INVENTION

The present invention is generally directed towards a document modification apparatus and an image processing apparatus equipped with the document modification apparatus, for modifying image data obtained by reading a document. Conventional techniques have drawbacks that limit the types of documents as the target to be modified. *See Background of the Invention.*

Accordingly, an object of the present invention is to provide a document modification apparatus and an image processing apparatus equipped with the document modification apparatus with a high versatility, which are capable of reducing an operator's work to handle a document including characters, a photograph, a table, a ruled line, and a frame, and capable of performing the modification process efficiently. *See Summary of the Invention.*

In accordance with an embodiment of the present invention, a document modification apparatus for modifying image data read by image input means comprises region extracting means, region attribute judgment means, region selection means, modification specifying means, and modification image making means. The region extracting means extracts rectangle regions as the target regions to be modified from the input image data. The region attribute judgment means

judges whether an attribute of each rectangle region is one of at least more than two kinds of attributes "character", and "photograph". The region selection means selects target regions to be modified from the plurality of regions through an operator. The modification specifying means specifies kinds of the modifications for the target regions selected by the region selection means through the operator. The modification image making means makes a modified image, based on the kinds of the modifications, in the regions in the image data selected by the region selection means, specified by the modification specifying means. *See Summary of the Invention.*

According to this embodiment, the operator can select the target rectangle region for the modification, to be corresponded to the contents of the modifications that have been stored in advance, as the rectangle region corresponding to one of the attributes, "character", "photograph", "table", "ruled line", and "frame". That is, the document as the target to be modified can include the documents in which various attributes such as "character", "photograph", "table", "ruled line", and "frame" are mixed. It is thereby possible to perform easily and efficiently the modification for the image without any increasing the workload for the operator. In addition, it is also possible to increase the general versatility of the document modification apparatus and the image processing apparatus equipped with this document modification apparatus. *See Summary of the Invention.*

In accordance with another embodiment of the present invention, a document modification apparatus for modifying image data read by image input means comprises region extracting means, automatic modification means, and modification image making means. The region extracting means extracts a plurality of regions from the image data, each region being a unit to be modified. The automatic modification means automatically selects target regions to be modified from the plurality of regions, and automatically modifies the selected target regions

based on modifications that have been set in advance. The modification image making means makes an image modified image in the target regions selected by the automatic modification means based on the kinds of the modifications determined by the automatic modification means.

See Summary of the Invention.

According to this embodiment, the rectangle regions corresponding to the attributes such as "character", "photograph", "table", "frame", "ruled line", and so on are extracted from the original image, and modifies automatically the extracted rectangle regions according to the contents for the modification set in the table in advance. *See Summary of the Invention.*

6. ISSUES

The issues presented for review are:

- (1) Whether claims 1, 4, 5, 7, and 14 are unpatentable over the combined teachings of U.S. Patent No. 6,466,694 to Kamada et al., EP 0 587 450 to Kazuyuki et al., and U.S. Patent No. 6,512,848 to Wang et al.;
- (2) Whether claim 6 is unpatentable over the combined teachings of U.S. Patent No. 6,466,694 to Kamada et al., EP 0 587 450 to Kazuyuki et al., and U.S. Patent No. 6,512,848 to Wang et al. as applied to claim 1 and further in view of U.S. Patent No. 5,717,794 to Koga et al.;
- (3) Whether claim 8 is unpatentable over the combined teachings of U.S. Patent No. 6,466,694 to Kamada et al., EP 0 587 450 to Kazuyuki et al., and U.S. Patent No. 6,512,848 to Wang et al. as applied to claim 1 and further in view of U.S. Patent No. 4,785,296 to Tabata et al.; and
- (4) Whether claims 9, 10, 12, 13, and 15 are unpatentable over the combined teachings of U.S. Patent No. 6,466,694 to Kamada et al., EP 0 587 450 to Kazuyuki et al., and U.S. Patent

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No. 6,512,848 to Wang et al. as applied to claim 1 and further in view of U.S. Patent No. 6,043,823 to Kodaira et al.

7. GROUPING OF THE CLAIMS

Claims 1, 4, 5, 7, and 14 stand or fall together.

Claim 6 stands alone.

Claim 8 stands alone.

Claims 9, 10, 12, 13, and 15 stand or fall together.

8. ARGUMENTS WITH RESPECT TO ISSUES PRESENTED FOR REVIEW

A. PRIOR ART SUMMARY

The cited references will be summarized for the Board's convenience prior to arguments being presented.

(1) U.S. Patent No. 6,466,694 to Kamada et al.

Kamada et al. discloses a processing device that performs region identification of an input image, and then performs an intra-region recognition process. *See Abstract*. The invention relates to a document image processing device for determining an image of a document image constituent element such as a text, a table, a graphic, a frame, etc. by using a document image as an input, and performing a coding process by recognizing the document image constituent element. *See Field of the Invention*. An object of the invention is to provide a document image processing device for reducing a user load and implementing efficient operations when a process

result is verified and modified by a document image recognizing/editing device, and a method thereof. *See Summary of the Invention.*

The type code of each region and the individual code of a recognition result are then displayed, so that a user can modify both of the results of the region identification and the recognition process at one time. Furthermore, the processing device displays an original image close to the recognition result. If no correct answer exists among recognition candidates, code is added to the original image, and the original image with the code added is handled as a recognition result. *See Abstract.*

According to the Examiner, Kamada et al. does not, however, disclose “the judgment for identifying details of [a] process performed by second judgment means; and operation of the second judgment means being based on whether the first judgment means identifies the attribute as ‘others.’” *See Final Office Action at page 3.* Rather, Kamada et al. merely discloses a coding process and a method for displaying the individual codes of a character recognition result.

The image range of each of the document image constituent elements (a partial image of a document image) is defined with its circumscribed rectangle. *See column 10, lines 57 - 67.* With the method described in Kamada et al., any of the document image constituent elements could possibly become an instruction target without being restricted by an inclusive relationship [*emphasis added*]. *See column 11, lines 10 - 24.* One document image constituent element can be selected (as a recognition candidate) from a plurality of document image constituent elements whose regions have an inclusive relationship, but no other document image constituent element can be directly selected. *See column 11, lines 25 - 33.*

(2) EP 0 587 450 to Kazuyuki et al.

Kazuyuki et al. discloses an image processing method and apparatus. The invention relates to an image processing apparatus for dividing an input image into a character area and an area of a figure, table, or the like in an electronic apparatus such as OCR (optical character recognizing) apparatus, copying apparatus, facsimile apparatus, or the like. *See* Field of the Invention. An embodiment of the invention provides an image processing apparatus which can realize the reduction of the processing time when an area is divided, the decrease in size of a recording area, the improvement of a dividing precision of a complicated area construction, and the like. *See* Summary of the Invention.

According to the invention, the input image is converted into the rectangle data and is classified into a character area and an area of a figure, photograph, table, separator, and the like and, further, partial histograms of the left and right edges in the vertical and horizontal directions of the area which was temporarily determined to be a table area are calculated and compared, thereby deciding whether the area is a table area or not. According to the invention, an input image is converted into rectangle data and is classified into a character area and an area of a figure or a photograph, table, separator, or the like, and further the rules in the vertical and horizontal directions of the area which was temporarily decided as a table area are detected and counted, thereby deciding whether the area is a table area or not. According to the invention, an input image is converted into rectangle data and is classified into a character area or an area of a figure or a photograph, table, separator, or the like, and a ratio of the area in a frame to the area of the area which was temporarily decided as a table area is obtained. *See* Summary of the Invention.

The Examiner cites Kazuyuki et al. as disclosing “a document image processing system comprising projecting means for taking a projection data in vertical and horizontal directions of the extracted rectangle regions to judge the attribute of the rectangle region, whose attributes has not been judged to be ‘character’ or ‘ruled line’, is one of a ‘table’, ‘photograph’ and a ‘frame’ according to a number of peaks detected from the projection data.” *See* Final Office Action at page 4.

However, in Kazuyuki et al. by using the width of the above rectangle, height, area, and the number of pixels, namely, pixel density to the area, a separator detector 108 merely distinguishes a rectangle corresponding to a character portion (body), a rectangle corresponding to a figure or photograph, a rectangle corresponding to a table and a rectangle corresponding to a separator. *See* (Embodiment 1).

(3) U.S. Patent No. 6,512,848 to Wang et al.

Wang et al. discloses a method for increasing the accuracy of image data classification in a page analysis system for analyzing image data of a document page. *See* Abstract. The method utilizes a block selection technique, and particularly a system in which blocks of image data are classified based on characteristics of the image data. *See* Field of the Invention. The invention relates to a method for classifying blocks of image data within a document page which utilizes optical character recognition processing to address shortcomings in existing block selection techniques. *See* Summary of the Invention.

The method includes inputting image data of a document page as pixel data, analyzing the pixel data in order to locate all connected pixels, rectangularizing connected pixel data into blocks, analyzing each of the blocks of pixel data in order to determine the type of image data

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contained in the block, outputting an attribute corresponding to the type of image data determined in the analyzing step, and performing optical character recognition to attempt to recognize a character of the block of image data in the case that the analyzing step cannot determine the type of image data contained in the block. *See Abstract.*

In another embodiment, in the case that the type of data is indicated as text data and a size of the text data is outside a predetermined size threshold, the method further comprises performing optical character recognition on the text data. *See Summary of the Invention.*

The Examiner cites Wang et al. as teaching “an OCR processing technique (second judgment means) [that] is used to determine the type of the unknown ‘others’ block.” *See Final Office Action at page 5.* However, in Wang et al. in step S606, each block is analyzed to determine if the connected component within the block meets certain criteria indicative of text data. If the block is smaller than a predetermined threshold size, it is initially determined to be non-text and flow proceeds to step S609. Alternatively, the text/non-text threshold may be based on the average height and width of other rectangles within the page. *See column 5, lines 10 - 20.*

(4) U.S. Patent No. 5,717,794 to Koga et al.

Koga et al. discloses a document recognition system that includes various cognitive steps for document recognition, and various correctional steps corresponding to the cognitive steps. *See Abstract.* The invention relates to a document recognition system for recognizing characters contained in documents and drawings. *See Field of the Invention.* The invention has for its object to suggest in detail the specifications of a method and a system which can efficiently correct the errors developing at the steps of layout analysis, character line extraction, character segmentation, etc. *See Summary of the Invention.*

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The user can inform the system of the correct limits of a character line against the limits of the character line misrecognized by the system. As a result, rapid correction processing can be realized. *See* Summary of the Invention.

The Examiner cites Koga et al. as teaching at at-a-glance menu. *See* Final Office Action at page 6.

(5) U.S. Patent No. 4,785,296 to Tabata et al.

Tabata et al. discloses a display system which uses one display unit as if it were a plurality of display units to separately display whole information and partial information of document. *See* Abstract. The invention relates to a display system for a multi-window display, and more particularly to a display method and system which is suitable for interactive document processing and/or image processing. *See* Field of the Invention. It is an object of the invention to provide a display method and system which allow efficient and economic interactive processing of a complex document presenting information having a mixture of Kanji characters and image data. *See* Summary of the Invention.

A plurality of display windows are defined on one display screen and a layout or a reduced image of the whole information is displayed in one of the window and information or image representing the information of a partial area of the whole information is displayed in other window. When one of the whole information and the partial area information is changed, the other information is also changed correspondingly, or a mark indicating a relation between the whole information and the partial area information is displayed in one of the window. *See* Abstract.

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For example, when the document processing such as insertion, deletion or revision of a character is effected on the partial-view window, the contents of the partial-view window as well as the whole-view window are simultaneously updated. The same is true when a document layout is revised on the whole-view window. *See* Summary of the Invention.

The Examiner cites Tabata et al. as teaching a resolution conversion means and display means. *See* Final Office Action at page 6.

(6) U.S. Patent No. 6,043,823 to Kodaira et al.

Kodaira et al. discloses a document processing apparatus that includes a division section for dividing a document image into a plurality of regions or connection components. A recognition section recognizes the type of a region in units of divided regions and edit sections and edits region data while displaying the recognition result. A shaping section then shapes the document image by using the edited region data. *See* Abstract. The invention relates to a document processing apparatus and method for reading out a document (original) to copy the image as a hard copy or convert the image into image data and store the image data. *See* Field of the Invention. It is an object of the invention to provide a document processing apparatus which allows to extract a title, text, illustration, drawing, or photograph region from a document image including various data including the title, text, illustration, drawing, and photograph and independently store the image data or independently correct the image data to output a hard copy. *See* Summary of the Invention.

According to the system of the invention, upon receiving a document image, image elements of different types such as a title region, a text region, a drawing region, a page region, and a photograph region included in the input image are extracted as regions. The importance of

each region in the document is recognized in accordance with predetermined rules, or the recognition result is corrected. With this processing, necessary portions and unnecessary portions can be properly separated and processed. Therefore, when document image data is to be filed, or when a hard copy is to be output, the user can satisfactorily edit or adjust the image data for final use and open up new utilization and application fields. *See* Summary of the Invention.

The Examiner cites Kodaira et al. as teaching automatic modification means. *See* Final Office Action at page 7.

B. ARGUMENTS

(1) Whether claims 1, 4, 5, 7, and 14 are unpatentable over the combined teachings of Kamada et al., Kazuyuki et al., and Wang et al.

Appellants submit that claims 1, 4, 5, 7, and 14 are patentable as a separate group because the combination of references fails to teach or suggest a "...region extracting means [that] extracts rectangle regions as the target regions to be modified,...[that] comprises a *first* judgment means for judging whether an attribute of the rectangle region is *one* of a "character" and "ruled-line," and "others," projection means for taking a projection data in vertical and horizontal directions of the rectangle region of the image data, and a *second* judgment means for judging whether the attribute of the rectangle region, whose attribute has been judged by the first judgment means as "others," is *one* of a "table," a "photograph," and a "frame" according to a number of peaks detected from the projection data, [*emphasis added*] operation of the second judgment means being based on whether the first judgment means identifies the attribute as "others." *See* claim 1.

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Since claims 1, 4, 5, 7, and 14 stand or fall together, independent claim 1 will be used as an exemplary claim in the following discussion.

The configuration as recited in claim 1 provides for an embodiment of the invention where modification of documents as the target which can include documents in which various attributes such as "character", "photograph", "table", "ruled line", and "frame" are mixed. *See* Specification of the present Application at page 21, paragraph beginning on line 1.

In the Final Rejection mailed November 7, 2005, the Examiner rejected claims 1, 4, 5, 7, and 14 under 35 U.S.C. §103(a) as being unpatentable over the combined teachings of Kamada et al., Kazayuki et al., and Wang et al.

However, Appellants respectfully assert that the combination of references does not disclose a *first* judgment means for judging whether an attribute of the rectangle region is *one* of a "character" and "ruled-line," and "others," and a *second* judgment means for judging whether the attribute of the rectangle region, whose attribute has been judged by the first judgment means as "others," is *one* of a "table," a "photograph," and a "frame" according to a number of peaks detected from the projection data.

Although the cited references disclose rectangularizing and modifying documents, their combination fails to teach the modification of documents as the target which can include documents in which various attributes such as "character", "photograph", "table", "ruled line", and "frame" are mixed. *See* for example Figures 5, 6, 10C, 12, and 14. Rather, the combination of references teaches a coding and displaying the individual codes of a character recognition result of constituent elements of a document (Kamada et al.), distinguishing a rectangle corresponding to character, figure or photograph, table, separator portions of an image (Kazuyuki

et al.), and analyzing blocks of data to determine if the connected component within the block meets certain criteria indicative of text data (Wang et al.).

Therefore, referring specifically to the language of claim 1, the combination of references fails to teach extracting rectangle regions attributes of a rectangle region including a “character” and “others” or a “ruled-line” and “others.” The attribute of “others” is a “table,” a “photograph,” or a “frame.” In other words, the region attribute judgment means judges whether an attribute of each rectangle region is one of at least more than two kinds of attributes [*emphasis added*].

Instead, the combination of references merely teaches judging which attribute is in a rectangle region containing individual attributes. In contrast, a rectangle region of the present invention has attributes that include a “character” and “others” or a “ruled-line” and “others.”

In summary, Appellants respectfully submit that the combination of references does not teach or suggest all of the limitations of the claimed invention and therefore does not render claim 1 unpatentable under 35 U.S.C. §103(a). Based on the comments above and in view of the evidence presented, Appellants respectfully submit that independent claim 1 and its dependent claims 4, 5, 7, and 14 are patentable under 35 U.S.C. §103(a) over the combination of Kamada et al., Kazuyuki et al., and Wang et al. The Examiner’s rejection of claims 1, 4, 5, 7, and 14 on these grounds is therefore improper and should be reversed.

(2) Whether claim 6 is unpatentable over the combined teachings of Kamada et al., Kazuyuki et al., and Wang et al. as applied to claim 1 and further in view of Koga et al.

Appellants submit that claim 6 is patentable as a separate group because the cited art fails to teach or suggest a “...modification specifying means [that] displays an at-a-glance menu showing information regarding kinds of the modification...”

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Since claim 6 stands alone, dependent claim 6 will be used as an exemplary claim in the following discussion.

In addition to claim 1 as discussed above, the Examiner rejected claim 6 under 35 U.S.C. §103(a) as being unpatentable over the combination of Kamada et al., Kazuyuki et al., and Wang et al. in the Final Rejection.

Although Appellants agree that Koga et al. may disclose a display screen and control panel in Figures 15 and 17, Appellants respectfully assert that in addition, as discussed above in connection with claim 1, Koga et al. fails to teach a *first* judgment means for judging whether an attribute of the rectangle region is *one* of a “character” and “ruled-line,” *and* “others,” and a *second* judgment means for judging whether the attribute of the rectangle region, whose attribute has been judged by the first judgment means as “others,” is *one* of a “table,” a “photograph,” and a “frame” according to a number of peaks detected from the projection data.

Instead, the combination of references merely teaches judging which attribute is in a rectangle region containing individual attributes. In contrast, a rectangle region of the present invention has attributes that include a “character” and “others” or a “ruled-line” and “others.”

In summary, Appellants respectfully submit that the combination of references does not teach or suggest all of the claim limitations of the invention and thus does not render claim 6 unpatentable under 35 U.S.C. §103(a). Based on the comments above and in view of the evidence presented, Appellants respectfully submit that dependent claim 6 is patentable under 35 U.S.C. §103(a) over the combination of Kamada et al., Kazuyuki et al., Wang et al., and Koga et al. The Examiner’s rejection of claim 6 on these grounds is therefore improper and should be reversed.

(3) Whether claim 8 is unpatentable over the combined teachings of Kamada et al., Kazuyuki et al., and Wang et al. as applied to claim 1 and further in view of Tabata et al.

Appellants submit that claim 8 is patentable as a separate group because the cited art fails to teach or suggest “...resolution conversion means for changing a resolution of the input image data to a reduced image and display means for displaying the reduced image...”

Since claim 8 stands alone, dependent claim 8 will be used as an exemplary claim in the following discussion.

In addition to claim 1 as discussed above, the Examiner rejected claim 6 under 35 U.S.C. §103(a) as being unpatentable over the combination of Kamada et al., Kazuyuki et al., and Wang et al. in the Final Rejection.

Although Appellants agree that Tabata et al. may disclose whole information of the document information or a reduced image thereof or a symbolic layout chart thereof and a partial information displayed in parallel, Appellants respectfully assert that in addition, as discussed above in connection with claim 1, Koga et al. fails to teach a *first* judgment means for judging whether an attribute of the rectangle region is *one* of a “character” and “ruled-line,” and “others,” and a *second* judgment means for judging whether the attribute of the rectangle region, whose attribute has been judged by the first judgment means as “others,” is *one* of a “table,” a “photograph,” and a “frame” according to a number of peaks detected from the projection data.

Instead, the combination of references merely teaches judging which attribute is in a rectangle region containing individual attributes. In contrast, a rectangle region of the present invention has attributes that include a “character” and “others” or a “ruled-line” and “others.”

In summary, Appellants respectfully submit that the combination of references does not teach or suggest all of the claim limitations of the invention and thus does not render claim 8 unpatentable under 35 U.S.C. §103(a). Based on the comments above and in view of the evidence presented, Appellants respectfully submit that dependent claim 8 is patentable under 35 U.S.C. §103(a) over the combination of Kamada et al., Kazuyuki et al., Wang et al., and Tabata et al. The Examiner's rejection of claim 8 on these grounds is therefore improper and should be reversed.

(4) Whether claims 9, 10, 12, 13, and 15 are unpatentable over the combined teachings of Kamada et al., Kazuyuki et al., and Wang et al. as applied to claim 1 and further in view of Kodaira et al.

Appellants submit that claims 9, 10, 12, 13, and 15 are patentable as a separate group because the combination of references fails to teach or suggest "an automatic modification means" and a "...region extracting means [that] extracts rectangle regions as the target regions to be modified,...[that] comprises a *first* judgment means for judging whether an attribute of the rectangle region is *one* of a "character" and "ruled-line," and "others," projection means for taking a projection data in vertical and horizontal directions of the rectangle region of the image data, and a *second* judgment means for judging whether the attribute of the rectangle region, whose attribute has been judged by the first judgment means as "others," is *one* of a "table," a "photograph," and a "frame" according to a number of peaks detected from the projection data, [emphasis added] operation of the second judgment means being based on whether the first judgment means identifies the attribute as "others." See claim 9.

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Since claims 9, 10, 12, 13, and 15 stand or fall together, independent claim 9 will be used as an exemplary claim in the following discussion.

The configuration as recited in claim 9 provides for another embodiment of the invention where the contents of the modification is fixed, for example, applied to a document such as an advertisement because it is possible to automatically perform the modification to the document without necessary of any operator's work. *See* Specification of the present Application at page 23, paragraph beginning on line 30.

In the Final Rejection mailed November 7, 2005, the Examiner rejected claims 9, 10, 12, 13, and 15 under 35 U.S.C. §103(a) as being unpatentable over the combined teachings of Kamada et al., Kazayuki et al., and Wang et al. as applied to claim 1 and further in view of Kodaira et al.

Appellants have discussed in paragraph (1) that the combination of references does not disclose a *first* judgment means for judging whether an attribute of the rectangle region is *one* of a “character” and “ruled-line,” and “others,” and a *second* judgment means for judging whether the attribute of the rectangle region, whose attribute has been judged by the first judgment means as “others,” is *one* of a “table,” a “photograph,” and a “frame” according to a number of peaks detected from the projection data.

Instead, the combination of references merely teaches judging which attribute is in a rectangle region containing individual attributes. In contrast, a rectangle region of the present invention has attributes that include a “character” and “others” or a “ruled-line” and “others.”

Further, Appellants respectfully assert that Kodaira et al. also does not disclose “...automatic modification means for automatically selecting target regions to be modified from the plurality of regions, and for automatically modifying the selected target regions based on

modifications that have been set in advance...” Instead, in Kodaira et al. upon receiving a document image, region data included in the input image can be automatically recognized, and the recognition result is displayed for the user to facilitate edit processing.

Therefore, referring specifically to the language of claim 9, the combination of references fails to teach automatically selecting target regions and automatically modifying the selected target regions; and extracting rectangle regions attributes of a rectangle region including a “character” and “others” or a “ruled-line” and “others.” The attribute of “others” is a “table,” a “photograph,” or a “frame.” In other words, the region attribute judgment means judges whether an attribute of each rectangle region is one of at least more than two kinds of attributes [*emphasis added*].

Instead, the combination of references merely teaches automatically recognizing attributes and judging which attribute is in a rectangle region containing individual attributes. In contrast, a rectangle region of the present invention is automatically modified and has attributes that include a “character” and “others” or a “ruled-line” and “others.”

In summary, Appellants respectfully submit that the combination of references does not teach or suggest all of the limitations of the claimed invention and therefore does not render claim 9 unpatentable under 35 U.S.C. §103(a). Based on the comments above and in view of the evidence presented, Appellants respectfully submit that independent claim 9 and its dependent claims 10, 12, 13, and 15 are patentable under 35 U.S.C. §103(a) over the combination of Kamada et al., Kazuyuki et al., and Wang et al. The Examiner’s rejection of claims 9, 10, 12, 13, and 15 on these grounds is therefore improper and should be reversed.

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9. CONCLUSION

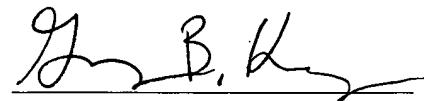
For the above reasons, Appellants submit that claims 1, 4, 5, 7, and 14 are not unpatentable over the combination of Kamada et al., Kazuyuki et al., and Wang et al.; claim 6 is not unpatentable over the combination of Kamada et al., Kazuyuki et al., and Wang et al. as applied to claim 1 and further in view of Koga et al.; claim 8 is not unpatentable over the combination of Kamada et al., Kazuyuki et al., and Wang et al. as applied to claim 1 and further in view of Tabata et al.; claims 9, 10, 12, 13, and 15 are not unpatentable over the combination of Kamada et al., Kazuyuki et al., and Wang et al. as applied to claim 1 and further in view of Kodaira et al.

Therefore, Appellants respectfully submit that the Examiner's rejections of claims 1, 4 - 10, and 12 - 15 are improper and respectfully requests that the Examiner's rejections of the claims be REVERSED.

Respectfully submitted,

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10. APPENDIX OF CLAIMS AS PENDING

The text of the claims on appeal is:

1. (Previously Presented) A document modification apparatus for modifying image data read by image input means, comprising:

region extracting means for extracting a plurality of regions from the image data, each region being a unit to be modified;

region selection means for selecting target regions to be modified from the plurality of regions through an operator;

modification specifying means for specifying kinds of the modifications for the target regions selected by the region selection means through the operator; and

modification image making means for making a modified image, based on the kinds of the modifications, in the regions in the image data selected by the region selection means, specified by the modification specifying means;

wherein the region extracting means extracts rectangle regions as the target regions to be modified, and the region extracting means comprises a first judgment means for judging whether an attribute of the rectangle region is one of a “character” and “ruled-line,” and “others,” projection means for taking a projection data in vertical and horizontal directions of the rectangle region of the image data, and a second judgment means for judging whether the attribute of the rectangle region, whose attribute has been judged by the first judgment means as “others,” is one of a “table,” a “photograph,” and a “frame” according to a number of peaks detected from the projection data,

operation of the second judgment means being based on whether the first judgment means identifies the attribute as “others.”

2. – 3. (Canceled)

4. (Previously presented) The document modification apparatus according to claim 1, wherein the region extracting means integrates the rectangle region, whose attribute has been judged as “character” by the first judgment means, per line and paragraph, and the region selection means selects the target region to be modified per line and paragraph through the operator.

5. (Previously presented) The document modification apparatus according to claim 1, wherein the region extracting means displays on the display screen the rectangle regions extracted by the region extracting means with the image data read by the image input means, and selects whether each rectangle region on the display screen is modified or not through the operator.

6. (Previously presented) The document modification apparatus according to claim 1, wherein the modification specifying means displays an at-a-glance menu showing information regarding kinds of the modification, and selects the modification, to be applied to the selected rectangle regions, from the kinds of the modifications shown in the at-a-glance menu through the operator.

7. (Previously presented) The document modification apparatus according to claim 1, wherein the modification image making means comprises memory means for storing position

information of the selected rectangle regions by the region selection means and the modification information regarding the kinds of the modifications specified by the modification specifying means,

and the modification image making means performs the modification for the image data read by the image input means based on the position information and the modification stored in the memory means.

8. (Previously presented) The document modification apparatus according to claim 1, further comprises resolution conversion means for changing a resolution of the input image data to a reduced image and display means for displaying the reduced image obtained by the resolution conversion means with the rectangle regions extracted by the region extracting means.

9. (Previously Presented) A document modification apparatus for modifying image data read by image input means, comprising:

region extracting means for extracting a plurality of regions from the image data, each region being a unit to be modified;

automatic modification means for automatically selecting target regions to be modified from the plurality of regions, and for automatically modifying the selected target regions based on modifications that have been set in advance; and

modification image making means for making an image modified image in the target regions selected by the automatic modification means based on the kinds of the modifications determined by the automatic modification means;

wherein the region extracting means extracts rectangle regions as the target regions to be modified, and the region extracting means comprise a first judgment means for judging whether an attribute of the rectangle region is one of a “character” and “ruled-line,” and “others,” projection means for taking a projection data in vertical and horizontal directions of the rectangle region of the image data, and a second judgment means for judging whether the attribute of the rectangle regions, whose attribute has been judged by the first judgment means as “others,” is one of a “table,” a photograph,” and a “frame” according to a number of peaks detected from the projection data, the operation of the second judgment means being based on whether the first judgment means identifies the attribute as “others.”

10. (Previously presented) The document modification apparatus according to claim 9, wherein the automatic modification means determines a kind of the modification to be applied to each selected target region in consideration of the attribute for the selected target region and the position of the selected target region in the input image data.

11. (Canceled)

12. (Previously presented) The document modification apparatus according to claim 1, wherein the image input means converts the input image data to binary image data.

13. (Previously presented) The document modification apparatus according to claim 9, wherein the image input means converts the input image data to binary image data.

14. (Original) An image processing apparatus comprising:
image input means for reading image data from a document;
the document modification apparatus, as claimed in claim 1, for making modified image
by modifying the input image data obtained by the image input means; and
image output means for outputting the modified image obtained by the document
modification apparatus.

15. (Original) An image processing apparatus comprising:
image input means for reading image data from a document;
the document modification apparatus, as claimed in claim 9, for making modified image
by modifying the input image data obtained by the image input means; and
image output means for outputting the modified image obtained by the document
modification apparatus.